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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/767,755 | 01/28/2004 | Katsuichi Imaizumi | P/16-352 | 5418 |
| 2352 | 7590 | 06/28/2006 | EXAMINER | |
| OSTROLENK FABER GERB & SOFFEN 1180 AVENUE OF THE AMERICAS NEW YORK, NY 100368403 | | | LEUBECKER, JOHN P | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 3739 | |

DATE MAILED: 06/28/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|---------------------------------------|--|
| Office Action Summary | Application No. 10/767,755 | Applicant(s) IMAZUMI ET AL. | |
| | Examiner John P. Leubecker | Art Unit 3739 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 January 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 35-83 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 35 and 52-76 is/are allowed.
- 6) ☒ Claim(s) 36-38, 40-45 and 77-83 is/are rejected.
- 7) ☒ Claim(s) 39 and 46-51 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☒ Certified copies of the priority documents have been received in Application No. 08/974,531.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>1/28/04</u> . | 6) <input type="checkbox"/> Other: _____ |

Specification

1. The disclosure is objected to because of the following informalities: the continuation data in the first paragraph of the specification should be updated as to the status of the parent applications.

Appropriate correction is required.

Claim Objections

2. Claim 45 is objected to because of the following informalities: as to claim 45, one of the periods at the end of this claim should be deleted. Appropriate correction is required.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 77 and 79-83 are rejected under 35 U.S.C. 102(b) as being anticipated by Sano et al. (U.S. Pat. 6,099,466).

Referring mainly to the embodiment shown in Figure 15, Sano et al. discloses a light source apparatus (220D) including a light (21) and a filter unit which includes a plurality of visible light filters (e.g., R,G,B in Figure 7 or T in Fig.8) and a second filter unit including an excitation light filter (E, Figs.7 and 8), an endoscope (11) including a solid state image sensor (3)

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having a variable amplification factor (image intensifier 31 which adjusts the amplitude of the output of the image sensor and thus varies the amplification factor, col.10, lines 22-27)¹ and receiving both the reflected and fluorescent light without changing the optical path, an excitation light cutoff filter (6), switching device (22,23,25) for providing the filters selectively in the illumination path, a signal processor (224D), a display device (40) and a controller (232) for controlling the amplification factor.

5. Claims 77 and 82 are rejected under 35 U.S.C. 102(e) as being anticipated by Palcic et al. (U.S. Pat. 5,827,190).

Palcic et al. disclose an endoscope apparatus including an endoscope (col.8, lines 38-40), a solid state imaging device (12) in which the amplification factor can be varied (col.9, lines 47-49), a light source apparatus (col.10, lines 13-16), a signal processing means and display means (col.10, lines 7-11), a control means for controlling the amplification factor (col.10, lines 2-7), a switching device for switching between a first and second spectrum (col.9, lines 13-16) and a wavelength limiter (16, col.8, lines 61-63 and col.9, lines 39-42).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

¹ Such varying in amplitude will not create a loss of resolution.

7. Claims 36-38 and 78 are rejected under 35 U.S.C. 103(a) as being unpatentable over Palcic et al. in view of Kaneko et al. (U.S. Pat. 5,749,830).

Palcic et al. disclose the device as described above and further including a light controller for controlling power supplied to the light in relation to the switching state of the switching device such that the light operates at higher power when the excitation light being used (note col.10, lines 13-24 which describes the excitation light being ON five times longer than the non-excitation light, which would inherently requires more power). Thus, Palcic et al. meets all limitations of claims 36 and 78 except for that the excitation wavelength is in the “non-visible” spectrum. As was known in the art at the time of the invention, and as evidenced by Kaneko et al. (col.7, lines 34-38), ultraviolet wavelengths (which fall into the category of “non-visible”) must be used for excitation light for fluorescing certain abnormalities, dyes and tissues. Although Palcic et al. preferably employs blue light (col.9, lines 24-26) for to obtain fluorescence from certain specific tissues (col.9, lines 26-29), one of ordinary skill in the art would consider it only routine skill to employ a different wavelength spectrum (e.g., ultraviolet) as is known in the art for the excitation light, to target tissues, abnormalities or dyes that require such excitation wavelengths to fluoresce.

8. Claims 40-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sano et al.

Sano et al. disclose the device as described above and further disclose use of an excitation light in the blue wavelength range and thus fails to disclose that the excitation light filter is in the

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infrared region. The Examiner takes Official Notice that substances which emit fluorescence with wavelengths in an infrared spectrum (e.g. ICG) are well known and used in the art and would be obvious to use with a device for detecting such fluorescence (e.g., fluorescent endoscope). No matter what wavelength ranges are used in Sano et al., it would not require inventive effort to modify the Sano et al. device to produce any spectrum of light, whether visible or non-visible, that is known to cause fluorescence and to use the appropriate filters to obtain an image in that fluorescence wavelength range. Thus, since substances such as ICG are known and used in the art, it would have been obvious to one of ordinary skill in the art to have used the infrared spectrum for excitation light.

As to the remaining claims, the first filter unit comprise the R, G and B filters (Fig.7). In addition, the amplification factor is varied base on an amplitude of a periodical signal controlled by the controller (232) (note wires extending from the controller 232 and switch 33D to the image intensifier, Fig.15, depending on the spectrum irradiated to the object (note col.3, lines 10-15).

9. Claims 36-38 and 77-83 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaneko et al. in view of Hynecek (U.S. Pat. 5,337,340).

Referring mainly to Figure 11, Kaneko et al. disclose a light source means (40,50) including visible (red,green,blue) light and non-visible excitation light (col.7, line 37), an endoscope (30), a solid-state imaging device (74), a signal processing means (160), a display means (110), a switching means (140), and a wavelength limiting means (71a)(also note Fig.16). Kaneko et al. provides greater amplification to fluorescent light than reflected light using

circuitry (150) to first reduce noise and then to amplify the fluorescent light (col.18, lines 19-42). Thus, Kaneko et al. fails to disclose that the solid-state imaging device itself has a variable amplification, without loss of resolution. However, Hynecek teaches solid-state imaging device with internal controllable amplification. It would be obvious to one of mere ordinary skill in the art to use the teachings of Hynecek to provide a variable amplification solid-state imaging device in the device of Kaneko et al. to simplify the circuitry, reduce noise and increase speed of processing (note that the fluorescent image is integrated at least five times by the amplifying circuitry in Kaneko et al., note Fig.17), while maintaining the degree of amplification needed for the low intensity fluorescent light. With respect to the control means, Hynecek teaches control of the amplification factor using a variable amplitude clock signal (col.9, lines 17-23).

Additionally, with respect to claims 36 and 78, note col.23, line 7 to col.24, line 28 with respect to the light quantity control means. By adjusting the output of the light source when imaging fluorescence, the light source would inherently be operated at higher power to provide for a brighter image.

Further with respect to claims 36 and 78, the Examiner takes Official Notice that substances which emit fluorescence with wavelengths in an infrared spectrum are well known and used in the art and would be obvious to use with a device for detecting such fluorescence (e.g., fluorescent endoscope). No matter what wavelength ranges are used in the Kaneko et al. device, it would not require inventive effort to modify the Kaneko et al. device to produce any spectrum of light, whether visible or non-visible, that is known to cause fluorescence and to use the appropriate filters obtain an image in that fluorescence wavelength range. Thus, since

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substances such as ICG are known and used in the art, it would have been obvious to one of ordinary skill in the art to have used the infrared spectrum for excitation light.

As to claims 79, 80, 81 and 83, Kaneko et al., as discussed above with respect to claims 36 and 78, when being obviously modified to use an infrared source in place of the ultraviolet source (50, Fig. 11), Kaneko et al. would still fail to disclose an excitation light filter. The Examiner takes Official Notice that one of ordinary skill in the art would recognize the equivalence of providing a certain wavelength range of light by either a light source that produces such wavelength range or by filtering light from a light source that produces light that at least encompasses such wavelength range.

Allowable Subject Matter

10. Claims 35, 52-76, allowed.

11. Claims 39 and 46-51 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

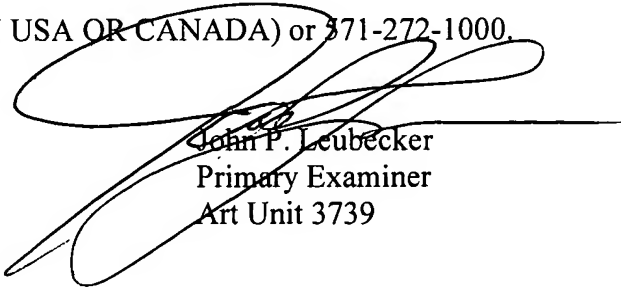
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John P. Leubecker whose telephone number is (571) 272-4769. The examiner can normally be reached on Monday through Friday, 6:00 AM to 2:30 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Linda C.M. Dvorak can be reached on (571) 272-4764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



John P. Leubecker
Primary Examiner
Art Unit 3739

jpl